ZyXEL

Multi-service IP DSLAM for Broadband IP Access

The importance of Broadband IP Access has been demonstrated by the year-after-year increase of new and innovative Internet, Voice, and Video applications. The adoption of IP gives service providers much more flexibility and efficiency than traditional networks comprised of various technologies such as frame relay, ATM, and TDM.

ZyXEL IP Express IP-based DSLAMs offer advantages over traditional technologies such as increased efficiency, faster speeds, and improved management. For example, they reduce the complexity of data format conversion, solve traffic congestion problems with high-speed, non-blocking Ethernet switching technology, and also provide a good mechanism for video multicasting applications, such as IGMP snooping. Thus, by eliminating protocol transformation over the access network, Telco operators have an alternative method to deploy a more cost effective Ethernet infrastructure from metro to core networks.

ZyXEL's IP Express series terminates and converts ATM traffic directly into an Ethernet environment. It covers a wide range of Central and Remote IP DSLAMs well suited for services with different deployment scales and requirements.
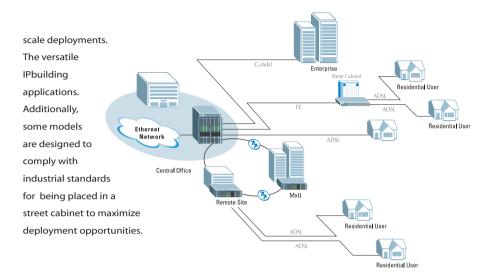

Multi-Service IP DSLAM

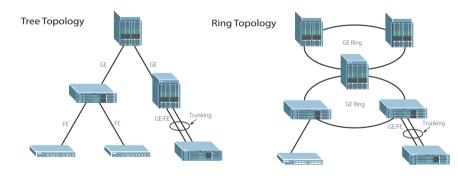**IES SERIES**

Benefits

Full-range DSLAM Family Covers Different Deployment Scenarios

ZyXEL's IP Express offers a broad range of options for every deployment scenario. Available models range from an affordable 8-port mini DSLAM, to a versatile, medium-size DSLAM, as well as a 360-port modular DSLAM that is Express family offers both DC power input, which is suitable for central office sites, and AC power inputs, which are commonly used for in- well-suited for large-scale deployments. The versatile IPbuilding applications. Additionally, some models are designed to comply with industrial standards for being placed in a street cabinet to maximize deployment opportunities.

Flexible Uplink Connections

All ZyXEL modular IP DSLAMs use MSC1000A (Management and Switching Card) for uplink and subtending purposes. MSC1000A comes with four Gigabit Ethernet interfaces for friendly deployment in a ring or tree topology.

ZyXEL provides a wide range of copper or optical transceivers on the uplink and subtending interfaces for applications of various distances and medias.
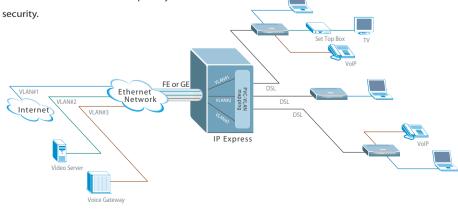
Full-range DSL Speed Offering

All IP Express models offer G.SHDSL and ADSL/ADSL2+ technologies in last mile applications. Speeds range from 128 Kbps up to 24 Mbps and loop-reach travels up to 6 km. Broadband service may be offered by using the existing copper wire infrastructure, which allows new revenue to be generated with minimum installation time and expense.

Tree Topology

Ring Topology

VLAN Offers Security and Segmented Class of Service

IP Express uses VLAN (Virtual LAN) to segment the class of services provided by service providers. Each Permanent Virtual Circuit (PVC) transformed to and from an ATM-based CPE can be configured and mapped to an assigned VLAN with different packet priorities. Thus, service providers can differentiate the class of services for Internet, VoIP and Video broadcasting. By using VLAN,

IP Express also allows service providers to provide B2B Intranet with network privacy and security.

Multicasting Optimizes Bandwidth Utilization

The IGMP snooping feature offered in the IP Express family only forwards traffic to subscribers who request multicast traffic. This prevents the unnecessary forwarding of multicast traffic to everyone, including non-subscribers and optimizes bandwidth utilization for bandwidth-consuming applications, such as broadcast video.

End-to-end Management Minimizes the Operation Cost

Besides basic configuration, fault, security, and performance management, the NetAtlas EMS management device also provides powerful and advanced remote management capabilities that help service providers minimize daily operational costs. Loop-back design helps isolate network problems, while new firmware and IP Express configuration allow for changes to be done remotely, eliminating the need for "truck rolls" in order to provision new customers or to reconfigure services for existing customers.

Product Portfolio

IES-1000

→ IES-1000

→ DSL Line Cards

IES-1248

→ IES-1248

→ Splitter Card

→ DSL Line Card

DSL Line Card

IES-2000/2500

→ IES-2000M/2500M

→ IES-2000ST/SW

→ Splitter/Extension Cards

→ DSL Line Cards

→ Management & Switching Card

Management & Switching Card

IES-3000

→ IES-3000M

→ IES-3000ST/SW

→ Management & Switching Card

→ Splitter/Extension Cards

→ DSL Line Cards

Product Portfolio

IES-1000
Multi-service mini IP DSLAM

A stand-alone mini IP DSLAM, the IES-1000 supports standard SHDSL technology, ADSL and ADSL2+ over POTS/ISDN with built-in CO splitter. Each IES-1000 has two slide-in slots where either 8-port SHDSL line cards or 8-port ADSL line cards or 12-port ADSL2+ with built-in CO splitters can be installed. The network administrator may determine the line-card combination to be used. Each ADSL or SHDSL module supports one 10/100BaseT Fast Ethernet interface as an uplink port. Each ADSL2+ module can support two 10/100BaseT Fast Ethernet interface as an uplink port.

IES-1248
Hardened mini IP DSLAM

A stand-alone mini IP DSLAM with the highly compact and temperature-hardened design, the IES-1248 supports 48-port ADSL/ADSL2/ADSL2+ over POTS/ISDN with built-in CO splitter. Each IES-1248 has two telco-50 connectors for ADSL/ADSL2/ADSL2+ line and two telco-50 connectors for built-in CO splitter. Two combo gigabit interfaces to support flexible uplink and subtending.

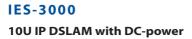## IES-2000
4U IP DSLAM with DC-power

4U in height, the IES-2000 is a modular IP DSLAM that supports a combination of standard SHDSL and ADSL and ADSL2+ line cards. A Management and Switching Card (MSC) provides sophisticated layer 2 switching features as well as modular Fast Ethernet and Gigabit Ethernet uplink/subtending interfaces. Each IES-2000 features one slide-in slot for a MSC card and 5 additional slots for any combination of supported DSL line cards.

IES-2500
4U IP DSLAM with AC-power

With a similar form factor to the IES-2000, the IES-2500 supports AC power (as opposed to DC power) and uses dedicated DSL (ADSL / ADSL2+) line cards. The functions and locations of the slide-in chassis slots are identical to the IES-2000.

IES-3000
10U IP DSLAM with DC-power

10U in height, the IES-3000 modular IP DSLAM shares MSC and line cards with the IES-2000. Each IES-3000 provides two slide-in slots for redundant MSC cards and 14 additional slots for numerous combinations of supported DSL line cards.

Each product within the IP DSLAM family is manageable by telnet, local console port, or SNMP. ZyXEL offers a powerful, yet user-friendly Element Management System (EMS), NetAtlas, which behaves as a SNMP Manger to perform fault, security, performance, and configuration management. The NetAtlas is designed to allow several concurrent administrators to simultaneously manage hundreds of IP Express IP DSLAMs. In order to satisfy the cost and performance needs of customer needs, the NetAtlas can operate upon two OS platforms: Windows 2000/XP and Sun Solaris.

Model Description

IES-1000

IES-1000(DC)
IES-1000 enclosure with two slide-in slots for DSL modules, DC power input
Dimension: 440 (L) x 320 (D) x 44.5 (H) mm

IES-1000(AC)
IES-1000 enclosure with two slide-in slots for DSL modules, AC power input
Dimension: 440 (L) x 320 (D) x 44.5 (H) mm

AAM1008-61
8-port Annex A ADSL line card (over POTS) with splitters built-in

AAM1008-63
8-port Annex B ADSL line card (over ISDN) with splitters built-in

SAM1008
8-port SHDSL line card

AAM1212-51
12-port Annex A ADSL2+ line card (over POTS) with splitters built-in

IES-1248

IES-1248-71(DC)
IES-1248 enclosure with 48-port Annex A ADSL2+ line and splitter over POTS, DC power input with temperature-hardened design
Dimension: 442.7 (L) x 250 (D) x 66 (H) mm

IES-1248-73(DC)
IES-1248 enclosure with 48-port Annex B ADSL2+ line and splitter over ISDN, DC power input with temperature-hardened design
Dimension: 442.7 (L) x 250 (D) x 66 (H) mm

IES-1248-71(AC)
IES-1248 enclosure with 48-port Annex A ADSL2+ line and splitter over POTS, AC power input
Dimension: 442.7 (L) x 250 (D) x 66 (H) mm

IES-2000

IES-2000M
IES-2000 main chassis with 6 slots, 1 for management and switching card (MSC) and 5 for line cards, DC power input
Dimension: 442.7 (L) x 268 (D) x 178 (H) mm

MSC1000A
Management and switching card with 4 FE/GE uplink/subtending

ALC1024-61
24-port Annex A ADSL line card (over POTS)

ALC1024-63
24-port Annex B ADSL line card (over ISDN)

ALC1224-71
24-port Annex A ADSL2+ line card (over POTS)

ALC1224-73
24-port Annex B ADSL2+ line card (over ISDN)

SLC1024
24-port SHDSL line card

IES-2000ST
IES-2500 splitter chassis with 6 slots for splitter or extension cards, Telco-50 connectors on back plane
Dimension: 442.7 (L) x 280 (D) x 89 (H)mm

IES-2000SW
IES-2500 splitter chassis with 6 slots for splitter or extension cards, wire wrapping terminals on back plane
Dimension: 442.7 (L) x 280 (D) x 89 (H)mm

ASC1024-61
24-port Annex A ADSL/ADSL2+ splitter card (over POTS)

ASC1024-63
24-port Annex B ADSL/ADSL2+ splitter card (over ISDN)

SEC1024
24-port SHDSL extension card

IES-2500

IES-2500M
IES-2500 main chassis with 6 slots, 1 for management and switching card (MSC) and 5 for line cards, AC power input
Dimension: 442.7 (L) x 368 (D) x 178 (H)mm

MSC1000AL
Management and switching card with 4 FE/GE uplink/subtending, designed for IES-2500M

ALC1024-61L
24-port Annex A ADSL line card (over POTS), designed for IES-2500M

ALC1024-63L
24-port Annex B ADSL line card (over ISDN), designed for IES-2500M

ALC1224-71L
24-port Annex A ADSL2+ line card (over POTS)

IES-2000ST
IES-2500 splitter chassis with 6 slots for splitter or extension cards, Telco-50 connectors on back plane
Dimension: 442.7 (L) x 280 (D) x 89 (H)mm

IES-2000SW
IES-2500 splitter chassis with 6 slots for splitter or extension cards, wire wrapping terminals on back plane
Dimension: 442.7 (L) x 280 (D) x 89 (H)mm

ASC1024-61
24-port Annex A ADSL/ADSL2+ splitter card (over POTS)

ASC1024-63
24-port Annex B ADSL/ADSL2+ splitter card (over ISDN)

IES-3000

IES-3000M
IES-3000 main chassis with 16 slots, 1 for management and switching card (MSC) and 15 for line cards, or 2 slots for MSC cards with redundancy and 14 for line cards, DC power input
Dimension: 442.7 (L) x 268 (D) x 482.8 (H)mm

MSC1000A
Management and switching card with 4 FE/GE uplink/subtending

ALC1024-61
24-port Annex A ADSL line card (over POTS)

ALC1024-63
24-port Annex B ADSL line card (over ISDN)

ALC1224-71
24-port Annex A ADSL2+ line card (over POTS)

ALC1224-73
24-port Annex B ADSL2+ line card (over ISDN)

SLC1024
24-port SHDSL line card

IES-3000ST
IES-3000 splitter chassis with 15 slots for splitter or extension cards, Telco-50 connectors on back plane,
Dimension: 442.7 (L) x 280 (D) x 222.5 (H) mm

IES-3000SW
IES-3000 splitter chassis with 15 slots for splitter or extension cards, wire wrapping terminals on back plane,
Dimension: 442.7 (L) x 280 (D) x 222.5 (H) mm

ASC1024-61
24-port Annex A ADSL/ADSL2+ splitter card (over POTS)

ASC1024-63
24-port Annex B ADSL/ADSL2+ splitter card (over ISDN)

SEC1024
24-port SHDSL extension card

System Architecture

System	Main Chassis	Splitter chassis	Management and switching card	Line card	Splitter card
IES-1248	IES-1248-71(DC) IES-1248-73(DC) IES-1248-71(AC)	NA	NA	(built-in)	(built-in)
IES-1000	IES-1000(AC) IES-1000(DC)	NA	NA	AAM1008-61 AAM1008-63 SAM1008-22 AAM1212-51	(built-in on line cards)
IES-2000	IES-2000M	IES-2000ST IES2000SW	MSC1000A	ALC1024-61 ALC1224-71 ALC1024-63 ALC1224-73 SLC1024	ASC1024-61 ASC1024-63 SEC1024
IES-2500	IES-2500M	IES-2000ST IES-2000SW	MSC1000AL	ALC1024-61L ALC1224-71L ALC1024-63L	ASC1024-61 ASC1024-63
IES-3000	IES-3000M	IES-3000ST IES-3000SW	MSC1000A	ALC1024-61 ALC1224-71 ALC1024-63 ALC1224-73 SLC1024	ASC1024-61 ASC1024-63 SEC1024

Certification

EMC/ESD
FCC Part 15 Class A
EN55022 Class A
EN55024 Class A
ETS300 386

Safety
ITU-T K.20, Appendix C
CSA 60950
EN60950
IEC60950
UL60950

Reliability
ETS300 019

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